



# UNITED STATES PATENT AND TRADEMARK OFFICE

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09/739,739	12/20/2000	Masakazu Muroyama	SON-1968	4967

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EXAMINER

GEMMELL, ELIZABETH M

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/739,739

Examiner

Beth Gemmell

Applicant(s)

MUROYAMA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 20 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 and 74-76 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-13 and 74-76 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 20 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). Z.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13 and 74-76, drawn to a cold cathode field emission device, classified in class 313, subclass 310.
- II. Claim 14-73 and 77-79, drawn to the method of producing a cold cathode field emission device, classified in class 445, subclass 51.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the carbon film selective-growth region can be formed from a process other than a mask layer, such as sputtering.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Ronald Kananen on 29 January 2003 a provisional election was made with traverse to prosecute the invention of Group I, claim 1-13 and 77-79. Affirmation of this election must be made by applicant in replying to

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this Office action. Claims 14-76 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cathode electrode having an acicular form must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

Claims 4 and 11 are objected to because of the following informalities: It is unclear to the examiner, in the specification and drawings, exactly what is disclosed in regards to a first and second opening and the communication between the two.

Appropriate correction is required.

As best understood by the examiner Claims 4 and 7 are interpreted as the first opening as being the opening between the gate electrodes and the second opening being between the insulating layers below the gate electrodes.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 74-76 are rejected under 35 U.S.C. 102(b) as being anticipated by Debe (US Patent 5,726,524).

Re claims 1 and 2: Debe discloses, in figure 3b and throughout the disclosure, a cold cathode field emission device comprising: a cathode electrode (40) formed on a

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supporting substrate (41), a gate electrode which is formed above the cathode electrode and has an opening portion (34), and an electron emitting portion composed of a carbon film formed on a surface of a portion of the cathode electrode which portion is positioned in a bottom portion of the opening portion (38).

Re claim 3: Debe discloses the cathode electrode composed of copper (column 9, lines 35+).

Re claim 4: Debe discloses, in figure 3b and throughout the discloser, an insulating layer formed on the supporting substrate and the cathode electrode, and a second opening portion communicating with the opening portion formed in the gate electrode is formed in the insulating layer (36).

Re claims 74-76: Debe discloses, in figure 3b and throughout the disclosure, a cold cathode field emission display device comprising a plurality of pixels, each pixel comprising a cold cathode field emission device, an anode electrode (42), and a fluorescent layer (50), the anode electrode and the fluorescent layer being formed on the substrate so as to be opposed to the cold cathode field emission device; the cold cathode field emission device comprising: a cathode electrode (40) formed on a supporting substrate (41), a gate electrode which is formed above the cathode electrode and has an opening portion (34), a carbon film selective-growth region formed at least on a surface of a portion of the cathode electrode which portion is positioned in a bottom portion of the opening portion, and an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region (38).

Claims 5-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Twichell et al. (US Patent 5,608,283).

Re claim 5: Twichell et al. discloses, in figure 2 and throughout the disclosure, a cold cathode field emission device comprising a cathode electrode formed on a supporting substrate (12), a gate electrode which is formed above the cathode electrode and has an opening portion (18), a carbon film selective-growth region formed at least on a surface of a portion of the cathode electrode which portion is positioned in a bottom portion of the opening portion (22), and an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region (20).

Re claim 6: Twichell et al. discloses, in figure 2 and throughout the disclosure, the carbon film selective-growth region is the portion of the cathode electrode onto the surface of which portion metal particles adhere, or that portion of the cathode electrode on the surface of which portion of metal thin layer or an organometallic compound thin layer is formed (22 and 28).

Re claim 7: Twichell et al. discloses the metal particles are composed of the group consisting of molybdenum, nickel, titanium, chromium, iron, germanium, and gold (column 8, lines 4+).

Re claim 8: Twichell et al. discloses the surface of the carbon film selective-growth region having sulfur, boron or phosphorus adhering thereto (column 9, lines 6+).

Re claim 9: Twichell et al. discloses the organometallic compound thin layer is formed from an organometallic compound containing at least one element selected from the group consisting of zinc, tin, aluminum, lead, nickel and cobalt (column 8, lines 4+).

Re claim 10: Twichell et al. discloses the organometallic compound thin layer is composed of a complex compound (column 8, line 7).

Re claim 11: Twichell et al. discloses, in figure 2 and throughout the disclosure, an insulating layer formed on the supporting substrate and the cathode electrode (16), a second portion communicating with the opening portion formed in the gate electrode is formed in the insulating layer, and the carbon film is positioned in the bottom portion of the second opening portion.

Re claim 12: Twichell et al. discloses the metal particles adhering onto the surface of the cathode electrode having an acicular form (column 7, lines 55+).

Re claim 13: Twichell et al. discloses the acicular metal particles composed of titanium (column 8, lines 4+).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

emg  
February 10, 2003

Handwritten signature or initials, possibly "IA", with a checkmark-like stroke.